

### **AMENDMENTS TO THE CLAIMS:**

Please amend the Claims as follows:

1. (Cancel)
2. (Cancel)
3. (Cancel)
4. (Currently Amended) Method as claimed in claim ~~[[1]]~~ 34 for increasing the production range of a rolling installation, comprising said at least two rolling stands (L1, L2), each associated with means of controlling at least one of the quality factors such as thickness regularity, flatness and/or surface roughness, characterized in changing the configuration of at least one of the rolling stands (L1) depending on the dimensional, mechanical and metallurgical properties of product (M) to maintain the same quality throughout the global production range of the installation.
5. (Cancel)
6. (Cancel)
7. (Currently Amended) Method as claimed in ~~one of the claims 5~~ claim 34, characterized in that said at least one convertible stand (L1) is equipped with removable

work roll lateral back-up means (8, 8') so that, in an additional configuration, very small diameter work rolls (61, 61') that may be associated with lateral back-up means (8, 8') can be used.

8. (Currently Amended) Method as claimed in claim [[1]] 34, characterized in that changing the configuration of at least the first stand (L1) of the tandem rolling mill is ~~changed~~ (L1 is the first stand in the strip travel direction) in the strip travel direction.

9. (Original) Method as claimed in claim 8, characterized in that the first stand (L1) of the tandem mill can be converted to a four-high configuration for rolling strip with a breaking point equal to or lower than 600 MPa.

10. (Previously Presented) Method as claimed in claim 8, characterized in that at least the first stand (L1) of the tandem mill can be converted to a six-high configuration for rolling strip with a breaking point equal to or higher than 600 MPa at entry of the mill.

11. (Currently Amended) Method as claimed in claim [[1]] 34, characterized in that changing the configuration of the first (L1) and of the last (L4) stand of the rolling mill ~~is changed~~.

12. (Currently Amended) Method as claimed in claim [[1]] 34, characterized in operating at least three rolling stands in tandem, and in ~~that~~ changing the configuration of at least one intermediate stand (L2, L3) of the tandem mill ~~is changed~~.

13. (Currently Amended) Method as claimed in claim 12, characterized in ~~that~~ changing the configuration of said at least one intermediate stand (L2, L3) of the tandem mill ~~is changed~~ while keeping the configuration of the first (L1) and of the last (L4) stand of the rolling mill.

14. (Currently Amended) Method as claimed in claim [[1]] 34, characterized in ~~that~~ selecting the configuration of at least one of the stands (L1) of the rolling mill ~~is selected~~ depending on the mechanical and metallurgical properties of the product to allow a minimum thickness reduction of 70% in one pass throughout the global production range.

15. (Cancel)

16. (Cancel)

17. (Currently Amended) Installation as claimed in claim [[15]] 35, characterized in that the means ~~of~~ for changing the configuration of at least one convertible stand (L1) allow said stand to be converted from a six-high configuration comprising two work rolls

(22, 22') supported respectively, via one pair of first intermediate rolls (32, 32'), on one pair of back-up rolls (3, 3'), to an "eight-high" configuration comprising two work rolls (61, 61') supported respectively, via a pair of second intermediate rolls (62, 62'), on the same first intermediate rolls (32, 32') and the same back-up rolls (3, 3'), and reversely.

18. (Currently Amended) Installation as claimed in claim [[15]] 35, characterized in that at least one convertible stand (L1) is equipped with removable work roll lateral back-up means (8, 8') so that, in an additional configuration, very small diameter work rolls (61, 61'), associated with said lateral back-up means (8, 8'), can be used.

19. (Cancel

20. (Cancel)

21. (Cancel)

22. (Currently Amended) Installation as claimed in claim [[21]] 35, characterized in that the chocks (20, 20') (23, 23') of the work rolls (2, 2') (22, 22') of the first four-high and of the ~~second~~ six-high configuration respectively, are slidably mounted between the guiding faces (12a, 12b) provided at the ends of protruding parts (13a, 13b) integral with the stand housings (10) and supporting bending means (50, 50') that co-operate only with the work rolls (22, 22') of the ~~second~~ six-high configuration.

23. (Currently Amended) Installation as claimed in claim [[20]] 35, in which the roll chocks are slidably mounted between guiding faces provided at the ends of support parts (42, 42') supporting the bending means (5, 5'), characterized in that each chock (23, 23') (7, 7') is fitted with two pairs of back-up lugs spaced apart (24, 25, 24', 25') (71, 72, 71', 72') situated above and beneath the support parts (42, 42'), respectively.

24. (Currently Amended) Installation as claimed in claim 23, characterized in that the chocks (20, 20') of the work rolls (2, 2') of the ~~first~~ four-high configuration and the chocks (33, 33') of the intermediate rolls (32, 32') of the ~~second~~ six-high configuration cooperate with the same bending means (5, 5') supported on support parts (40, 40') integral with the housings (10) of the stand and that the chocks (33, 33') of the intermediate rolls (32, 32') are slidably mounted, in a direction parallel to the roll load plane P1, between guiding faces (41) provided at the ends of said support parts (40, 40').

25. (Currently Amended) Installation as claimed in claim 24, characterized in that the support parts (40, 40') carrying the bending means (5, 5') of the work rolls (2, 2') in the ~~first~~ four-high configuration and of the intermediate rolls (22, 22') of the ~~second~~ six-high configuration, are slidably mounted, in a direction parallel to roll axes and in opposite directions, above and beneath the rolling plane (P) respectively, in order to adjust the roll gap to the product width in each configuration.

26. (Cancel)

27. (Currently Amended) Installation as claimed in claim [[15]] 17, characterized in that at least one convertible stand (L2) is equipped, in a six-high configuration, with one pair of back-up rolls (3, 3'), one pair of first intermediate rolls (32, 32') and one pair of work rolls (22, 22') and, in an eight-high configuration, the same back-up rolls (3, 3') and the same first intermediate rolls (32, 32'), between which two cassette-type assemblies (6, 6') are intercalated, each ~~consisting of~~ comprising one small diameter work roll (61, 61') associated with one second intermediate roll (62, 62').

28. (Original) Installation as claimed in claim 27, characterized in that the convertible stand (L1) is equipped with lateral back-up means (8, 8') mounted on housings (10) of stand (1) and shiftable between two positions, a distant position for the six-high configuration and an engaged position for lateral back-up of each small diameter work roll (61, 61'), in the eight-high configuration.

29. (Currently Amended) Installation as claimed in claim 27, characterized in that each cassette-type assembly (6, 6') of the eight-high configuration comprises one second intermediate roll (62, 62') having two necks, each supported by a holding frame (7, 7') in the form of a chock supporting a bearing (74) and a small diameter work roll (61, 61') having two centering necks, each supported by an axial thrust bearing (75) accommodated in a box (76) connected to the frame (7, 7') holding the second

intermediate roll (62, 62') through spring-type means (77) ~~of~~ for pressing the work roll (61, 61') on the said second intermediate roll (62, 62').

30. (Currently Amended) Installation as claimed in claim 28, characterized in that each cassette-type assembly (6, 6') of the eight-high configuration comprises one second intermediate roll (62, 62') having two necks, each supported by a holding frame (7, 7') in the form of a chock supporting a bearing (74) and a small diameter work roll (61, 61') having two centering necks, each supported by an axial thrust bearing (75) accommodated in a box (76) connected to the frame (7, 7') holding the second intermediate roll (62, 62') through spring-type means (77) ~~of~~ for pressing the work roll (61, 61') on the said second intermediate roll (62, 62').

31. (Cancel)

32. (Cancel)

33. (Previously Presented) Installation as claimed in claim 17, characterized in that at least one convertible stand (L1) is equipped with removable work roll side back-up means (8, 8') so that, in an additional configuration, very small diameter work rolls (61, 61'), associated with the said side back-up means (8, 8'), can be used.

34. (New) Method for increasing the range of production of an installation for cold rolling of a strip-shaped product having an ultimate tensile stress ranging from less than 160 MPa to at least 1000 MPa, said method comprising operating at least two rolling stands (L1, L2) in tandem for gradually reducing the thickness of product (M), each stand being associated with means (15, 16) for applying a rolling force between two work rolls (2, 2'), allowing, for a given stand configuration, a certain percentage of thickness reduction to be achieved, taking into account the dimensional, mechanical and metallurgical properties of the product, whereby said properties are related to a given production range, equipping at least one (L1) of the stands with means for converting the configuration of the stand, hence convertible, while keeping the same means (15, 16, 3, 3') for applying the rolling force, in order to have at least three configurations each suited for one production range, including respectively a four-high arrangement comprising two work rolls (2, 2') supported on two back-up rolls (3, 3'), a six-high arrangement comprising two work rolls (22, 22') supported, via two intermediate rolls (32, 32') on the same back-up rolls (3, 3') and an eight-high arrangement comprising two work rolls (61, 61') supported respectively, via a pair of second intermediate rolls (62, 62'), on the same first intermediate rolls (32, 32') and the same back-up rolls (3, 3'), and reversely and, for rolling a product, selecting the configuration of at least one of the stands (L1) of the rolling mill depending on the mechanical and metallurgical properties of the product.

35. (New) Cold rolling installation, comprising means for allowing the product (M) to run through a rolling plane (P), successively in at least two rolling stands (L1, L2)



operating in tandem, each stand comprising two housings (10) between which at least four stacked rolls including two back-up rolls (3, 3') and two work rolls (2, 2') respectively, are slidably mounted, in a direction parallel to a roll load plane, and means (15, 16) for applying a rolling force between said rolls with adjustment of respective gaps, wherein at least one convertible stand (4) is provided with at least two possible configurations, while maintaining, for both configurations, at least the same back-up rolls (3, 3') and the same means for applying the rolling force (15, 16), including respectively a four-high configuration fit for a first production range, with two work rolls (2, 2') and two back-up rolls (3, 3') and a six-high configuration fit for a second production range, with two work rolls (22, 22'), two intermediate rolls (32, 32') and the same back-up rolls (3, 3') and reversely, the work rolls and intermediate rolls being each rotatably mounted on two chocks, each provided with at least two back-up lugs for means (5, 5') for adjusting the conditions under which the rolling force is transmitted including means for bending the respective rolls, wherein on each side of the rolling plane, the roll bending means (5, 5') are the same in both of said at least two possible configurations and co-operate respectively with back-up lugs (21, 24, 25) of the chocks of work rolls (2, 22) in the four-high configuration and back-up lugs (33, 63) of the chocks of intermediate rolls (32, 62) in the six-high configuration, respectively, and wherein said the back-up lugs (21, 21') of chocks (20, 20') or work rolls (2, 2') in the four-high configuration are offset with respect to roll axis, on the side opposite the rolling plane (P), and said back-up lugs (34, 34') of chocks (33, 33') of intermediate rolls (32, 32') in a six-high configuration are offset toward the rolling plane (P) with respect to roll axis, so that said back-up lugs (21, 21') of work

rolls (2, 2') and (34, 34') of intermediate rolls (32, 32') are arranged substantially at the same level and co-operate with the same adjusting means (5, 5').

36. (New) Installation as claimed in 17, characterized in that the chocks (20, 20') (23, 23') of the work rolls (2, 2') (22, 22') of the four-high and of the six-high configuration respectively, are slidably mounted between guiding faces (12a, 12b) provided at the ends of protruding parts (13a, 13b) integral with the stand housings (10) and supporting bending means (50, 50') that co-operate with the work rolls (22, 22') of the six-high configuration and with the second intermediate rolls (62, 62') of the eight-high configuration.